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EUROSISTEMA
CENTRAL BANK OF MALTA

AN INTRODUCTION TO THE DIGITAL EURO

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BOX 1: AN INTRODUCTION TO THE DIGITAL EURO¹

Introduction

Major central banks around the world are considering the introduction of some form of central bank digital currency (CBDC) and the ECB is no exception. The ECB published its first report on a digital euro in October 2020.² During the following year, it officially launched a two-year investigation phase on the design and distribution of a digital euro.³ This unit would be an electronic form of cash that would complement conventional paper currency in fulfilling the basic functions of money, that is, to provide a means of payment, serve as a store of value and act as a unit of account. Through the issuance of a digital euro, the Eurosystem would be adapting money to reflect the digital age, while assuring the public that physical cash would remain fully accepted and available throughout the euro area.

In June 2023, the European Commission published legislative proposals on a digital euro and the legal tender status of euro banknotes and coins.^{4,5} If these proposals were to be adopted, they would reinforce the acceptance of euro cash in transactions and its accessibility throughout the euro area.

In October 2023, the ECB issued a summary report⁶ following the conclusion of the investigation phase and announced the Governing Council's decision to launch the first part of the preparation phase. The two-year long first part of the preparation phase, which began on 1 November 2023, would include the finalisation of a rulebook and the selection of providers who would develop a platform and the required infrastructure.⁷ A decision by the Governing Council to issue a digital currency would only be taken following the enactment of the relevant legislation.

As a CBDC, a digital euro would be a liability of the Eurosystem. A digital euro would be exchanged at par against euro banknotes and coins. It would ensure the privacy of end-users to the largest extent possible. In principle, a digital euro would be available for use by citizens and businesses in the euro area for transaction purposes at any time and could be used in peer-to-peer transactions online or offline, and in both e-commerce and physical stores, through supervised financial intermediaries of their own choice. As a public good, a digital euro would be made accessible to the largest possible number of euro area residents without entailing any charges to end-users for basic services. A digital euro would act as a store of value for eligible natural persons similar to other Eurosystem liabilities, albeit with holding limits.

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² [Report on a digital euro](#), ECB, 2020.

³ [Eurosystem launches digital euro project](#), ECB Press Release, 14 July 2021.

⁴ [Proposal for a Regulation of the European Parliament and of the Council on the establishment of the digital euro. COM\(2023\) 369 final](#), European Commission, 28 June 2023.

⁵ [Proposal for a Regulation of the European Parliament and of the Council on the legal tender of euro banknotes and coins. COM\(2023\) 364 final](#), European Commission, 28 June 2023.

⁶ [A stocktake on the digital euro - Summary report on the investigation phase and outlook on the next phase](#), ECB, 18 October 2023.

⁷ [Eurosystem proceeds to next phase of digital euro project](#), ECB Press Release, 18 October 2023.

As a central-bank electronic money, a digital euro would preserve the Eurosystem's monetary sovereignty and the efficiency of the monetary-policy transmission mechanism and strengthen its autonomy in digital payment services across the euro area.

Retail and wholesale CBDC

A CBDC can be made available for retail payment services or wholesale funding. A retail digital currency could be used by both natural and legal persons, whereas a wholesale digital currency would be available only to eligible financial institutions.

A retail CBDC can take either of two forms, namely token or account-based. In token form, digital currency units are linked to a physical medium, for instance a mobile phone or payment card, which characterises ownership. In case of an account-based system, digital currency units are stored in an account linked to the holder and accessible online. Payments are made from an account to another provided that both the issuer and the beneficiary hold accounts denominated in the digital currency.

Wholesale CBDCs would ensure that users could exchange new classes of digital assets for currency units within a framework that would keep a distributed infrastructure operating approach. Settlement costs and times could be reduced as wholesale CBDCs do not require several intermediaries in the processing chain. Wholesale CBDCs could also reduce frictions that block some transactions, especially online.

At the current juncture, it is envisaged that the digital euro would take the form of a retail CBDC that would be available for use in all retail payment channels throughout the euro area. Payment service providers (PSPs), such as banks and other financial institutions, would play a central role in the distribution and management of digital euro accounts by acting as intermediaries between the Eurosystem and end-users. Such intermediaries would provide digital euro-related services across all euro area countries, including the maintenance of customer relationships.

Motivation for issuing a digital currency

A wide range of motives has prompted central banks around the world to consider issuing a digital currency of their own.⁸

Monetary sovereignty – If many economic agents in a country start using a digital currency of another jurisdiction or a private digital currency instead of the national currency unit, the ability of the central bank to perform its basic functions of conducting monetary policy and acting as lender of last resort may be hampered. A digital euro mitigates such risks and helps to ensure that central bank money continues to play a key role in the economy, supporting monetary autonomy in the euro area.

Financial stability – In the absence of a digital euro, the emergence of potentially dominant private providers of a digital currency in payment services could exert an excessively strong impact on the financial sector. A digital euro would protect the role of public money as a monetary anchor for the financial system and would always fulfil the role of a public good.

⁸ See Pfister, C. "[Central Bank Digital Currency: A Primer](#)", SUERF, 2020, *Policy Note* 143, p.2.

Financial inclusion – Financial inclusion refers to the wide reach of affordable digital technology in payment systems across the various segments of society. A CBDC facilitates financial inclusion by widening access to digital payments to embrace practically all members of society. Indeed, digital financial inclusion is a key principle underpinning a digital euro. Basic digital euro services will be available to euro area residents free of any charges.⁹

Access to payments – The development of technology is increasingly leading to a decline in users' preference for paper money. This reduces the use of central bank money in transactions due to lack of access to specific payment channels. This is also the case for the euro area, where the role played by cash as a retail payments instrument is diminishing. The development of a digital euro is not intended to replace euro banknotes, however, but rather to complement them by making central bank money also accessible to payment channels that cannot be accessed using banknotes, such as online shopping.

Making payments more efficient and less expensive – In countries where cash and cheque use is pronounced, operational costs related to cash handling and storage as well as cheque clearance are high. Through CBDC central banks could offer an alternative and cost-effective method of payment. In the case of a digital euro, the Eurosystem would bear its own costs, as it does with the production and issuance of banknotes, while the legislative proposal of the European Commission envisages that merchant fees would be no higher than existing alternative payment channels.

Ensuring resilience of payments – In the absence of a digital currency issued by the central bank, concerns arise about the potential disruption to digital services and the occurrence of concentration risks in payments systems where settlement is carried out exclusively by a few large private operators. Through a CBDC, the central bank can mitigate such risks significantly. A digital euro would potentially bolster the resilience of European payments.

Reducing the illicit use of money – A CBDC can mitigate the illicit use of money as, with a CBDC in place, users can be expected to make less use of cash, which is totally anonymous and absolutely lacks an audit trail. In contrast, with an account-based retail CBDC, transactions are not fully anonymous, as the intermediary must comply with the relevant legislation such as data and consumer protection, including safeguards against the risks of financial loss and risks to user security. With a digital euro, legislation related to anti-money laundering and combating the financing of terrorism (AML/CFT) would be still applicable for intermediaries with respect to on-boarding and transactions of end-users.

Competition – A CBDC can enhance competition in payments services by competing with existing forms of payments and by offering PSPs the opportunity to assume an intermediating role between payers and beneficiaries of funds, depending on the design of the digital currency platform.

⁹ Moreover, according to the ECB, "citizens of euro area countries who are not resident in the euro area may also have access to digital euro, provided they have the right to open a payment account in a euro area country without being a resident at that point of time." See "[A stocktake on the digital euro - Summary report on the investigation phase and outlook on the next phase](#)," ECB, 2023.

A digital euro is expected to act as a European platform for innovation, enabling financial intermediaries to develop additional services to their customers, at a fee, that would be instantly available across Europe. With a digital euro in place, the chance for large service providers to reach a monopolistic position would be lessened, though such big players may not be precluded from providing intermediary services, within a European regulatory framework.

Design features of a CBDC

Design features refer to the characteristics and functions of a CBDC. These aim to support policy goals or mitigate risks that could arise from issuing CBDC. During the investigation phase of the digital euro project, the Eurosystem carried out a holistic review to ensure consistency between all the design options endorsed so far. The ECB published the results of the prototype and market research exercises.¹⁰

Restrictions on CBDC holdings and use

The literature discusses potential risks that can arise from the introduction of a CBDC, including the crowding out of credit institutions and bank runs. These risks can be contained by the implementation of specific measures such as restricting CBDC holdings and transactions. In this regard, the design of the digital euro contemplates holding limits for end-users who are natural persons, whereas for legal persons, the holding limit will be zero.

Presently, central banks that have issued a CBDC do not pay interest on CBDC holdings, thus limiting CBDC competition with bank deposits. If no interest is paid on CBDC, it can still be attractive as a means of payment, although its appeal as a store of value diminishes. As regards digital euro holdings, the ECB is not developing a remunerated digital euro.¹¹ A non-remunerated digital euro would thus emulate more closely the properties of banknotes and coins.

Anonymity

Anonymity is one of the key characteristics of cash. Anonymity can be preferred by a section of the population who would like to benefit from confidentiality when effecting payments. Also, anonymity strengthens financial inclusion as the end-user does not need to satisfy identification requirements that can be costly or difficult to obtain. Anonymity, however, increases the risk of illicit use of money. As discussed further below, the European Commission's legislative proposals include certain features necessary to combat money laundering and the financing of terrorism that would apply to the digital euro.

The proposed design of a digital euro would guarantee the highest level of privacy for digital payments, with no access to individual information by the Eurosystem.

Offline capacity

Offline capacity would enable CBDC holders to use the digital currency to effect payment transactions where an internet connection is not available. Offline capacity is linked to the

¹⁰ [Digital euro – Prototype summary and lessons learned](#), ECB, 26 May 2023.

¹¹ [Opinion of the European Central Bank of 31 October 2023 on the digital euro \(CON/2023/34\)](#).

policy goal of resilience. The Eurosystem aims to develop a digital euro that will be available both online and offline.

Ease of use

The digital euro would enable smooth onboarding and simple access for end-users. Onboarding and access could take place via existing online banking or mobile banking apps or through a dedicated digital euro app developed by the Eurosystem. The Eurosystem also aims to enable users to easily switch digital euro holdings and services from one provider to another.

Cross-border payments using CBDC

Although retail CBDC projects are usually aimed at transactions undertaken within the same jurisdiction, central banks and international organisations are increasingly evaluating the potential use of CBDCs to enhance the efficiency of cross-border payments.

Operating model

Besides the technological model, for instance distributed ledger technology or technology based on centralised ledgers, associated with the conditions under which digital currency units are held, the choice of distribution channel also affects how a central bank may manage a retail CBDC. Two principal distribution channels can be identified.

First, in a direct model (or unilateral CBDC) no intermediaries are involved and central banks themselves provide the digital currency to end-users. Second, in an intermediated model (intermediated CBDC), central banks issue the CBDC and use intermediaries to provide the digital currency to end-users. This is expected to be the case with a digital euro, wherein supervised intermediaries will manage customer relationships, digital euro payments and related services to better ensure privacy for end-users.

Legal foundations for a CBDC

A CBDC requires a legal framework which empowers a central bank to issue CBDC and the legal status assigned to such a form of currency. According to a survey among central banks, most participants prefer granting legal tender status to CBDC.¹²

As regards the digital euro, an important element of the European Commission's legal proposal is the legal tender status granted to it. In general, the legal tender status granted to the digital euro would entitle citizens to use digital euro in payments and obliges suppliers to accept it. Nevertheless, the Commission's proposal recognises the right for a microenterprise not to accept the digital euro, unless it accepts comparable digital means of payment. Similarly, a natural person acting in the course of a purely personal activity is not obliged to accept the digital euro.

Privacy is of utmost importance in the design of a digital euro. A digital euro would be a new payment solution with enhanced privacy and data protection. A proposal put forward by the Eurosystem provides that only intermediaries would be able to access the user information

¹² Soderberg G et al. "[Behind the Scenes of Central Bank Digital Currency – Emerging Trends, Insights, and Policy Lessons.](#)" *IMF Note* 2022/004.

needed for onboarding clients and for ensuring compliance with existing AML regulation. Hence, a digital euro, whilst respecting privacy, would not provide total anonymity as does cash. Having said that, the possibility to pay offline would provide cash-like privacy, with neither the intermediary nor the central bank processing the payment. In its proposal, the European Commission states that by excluding full anonymity, the initiative would be consistent with the objectives of the AML package. The Commission adds that, meanwhile, the digital euro initiative provides a high level of privacy for offline digital euro payments, although the number and value of offline payments are likely to be limited to mitigate risks of fraud. Online digital euro payment transactions would follow the same data protection, privacy and AML/CFT rules as is the case for other digital means of payment, in conformity with the relevant EU legal framework.

Another aspect of the Commission's proposal envisages that end-users would be able to use basic services of the digital euro free of charge while intermediaries would be compensated in a similar way as for comparable digital means of payment.

The Commission's proposal recognises the ECB's ability to develop and apply the tools needed to maintain the equilibrium between commercial bank and central bank money. Such tools include the setting-up of holding limits.

Furthermore, the Eurosystem is working on a draft rulebook for a digital euro to regulate the relationship between the end-user, the intermediary, and the Eurosystem, and any disputes that may arise between them. This is taking place in close collaboration with representatives of a wide variety of stakeholders.

Way forward

The issuance of CBDC is a novelty in the world of central banking, and consequently it still presents some open issues and challenges together with opportunities.

Open issues include the nature of sustainable business models that ensure cost recovery to central banks and provide adequate incentives for private-sector participation. Other issues relate to the need to extend the boundaries of innovation to allow for the implementation of desirable features such as offline capacity. Key challenges include making choices in a very new and rapidly evolving business area, the appropriate technology to adopt, and the costs associated with the development process.

A retail CBDC is likely to bring about more efficiency in retail transactions by enabling firms to simplify invoicing and accounting processes as well as shortening payment times. As Fabio Panetta, the former Chair of the Eurosystem High-Level Task Force on digital euro, put it, "As people increasingly choose to pay digitally, we should be ready to issue a digital euro alongside cash ... A digital euro would increase the efficiency of European payments and contribute to Europe's strategic autonomy".¹³

Over the next two years, the Eurosystem will test technical solutions and business arrangements that could develop a digital euro which would meet both the Eurosystem's require-

¹³ Panetta F. (2021). [A digital euro to meet the expectations of Europeans](#), 14 April 2021.

ments and the needs of users. The Eurosystem will continue to engage with the public and all stakeholders during this phase. Subsequently, should the European Commission's legislative process be successfully concluded, the Governing Council of the ECB would need to decide whether to move to the next stage of preparations, which would pave the way for the possible eventual issuance and roll-out of a digital euro. According to ECB President Christine Lagarde, the single currency would be prepared for the future wherein "a digital euro can be used for all digital payments [...] It would coexist alongside physical cash, which will always be available, leaving no one behind".¹⁴

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¹⁴ [Eurosystem proceeds to next phase of digital euro project](#), ECB Press Release, 18 October 2023.